PHENIX VTX DB: Update

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April 5, 2006

Thanks to Matt & Kieran

Strategy

- **PHENIX VTX DB (PVD) purchased in late 2004**
  - Dual 3.2 GHz CPU rack-mounted Dell server
  - 500GB Disk, 2GB Memory
  - Similar machine handled 5 years of PHOBOS
- **Comprehensive Functionality**
  - Sensor inventory, bench tests, detector geometry, calibrations
  - Web server, VTX TWiki
- **Proven technologies**
  - Apache/PHP - standard web server & scripting language
  - Postgres/SQL - standard PHENIX DB (+ ROOT access)
  - Labview SQL interface

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PVD.chm

Resources:

- TWiki

Bench Tests:

- Graph I-V
- Graph C-V
- I-V Data entries
- C-V Data entries
- Dump I-V
- Dump C-V

Vendors:

- Add new vendor
- List vendors

Locations:

- Add new location
- List locations

Batches:

- Add new batch
- List batches

Wafers:

- Add new wafer
- List wafers

Sensors:

- Add new sensor
- List sensors

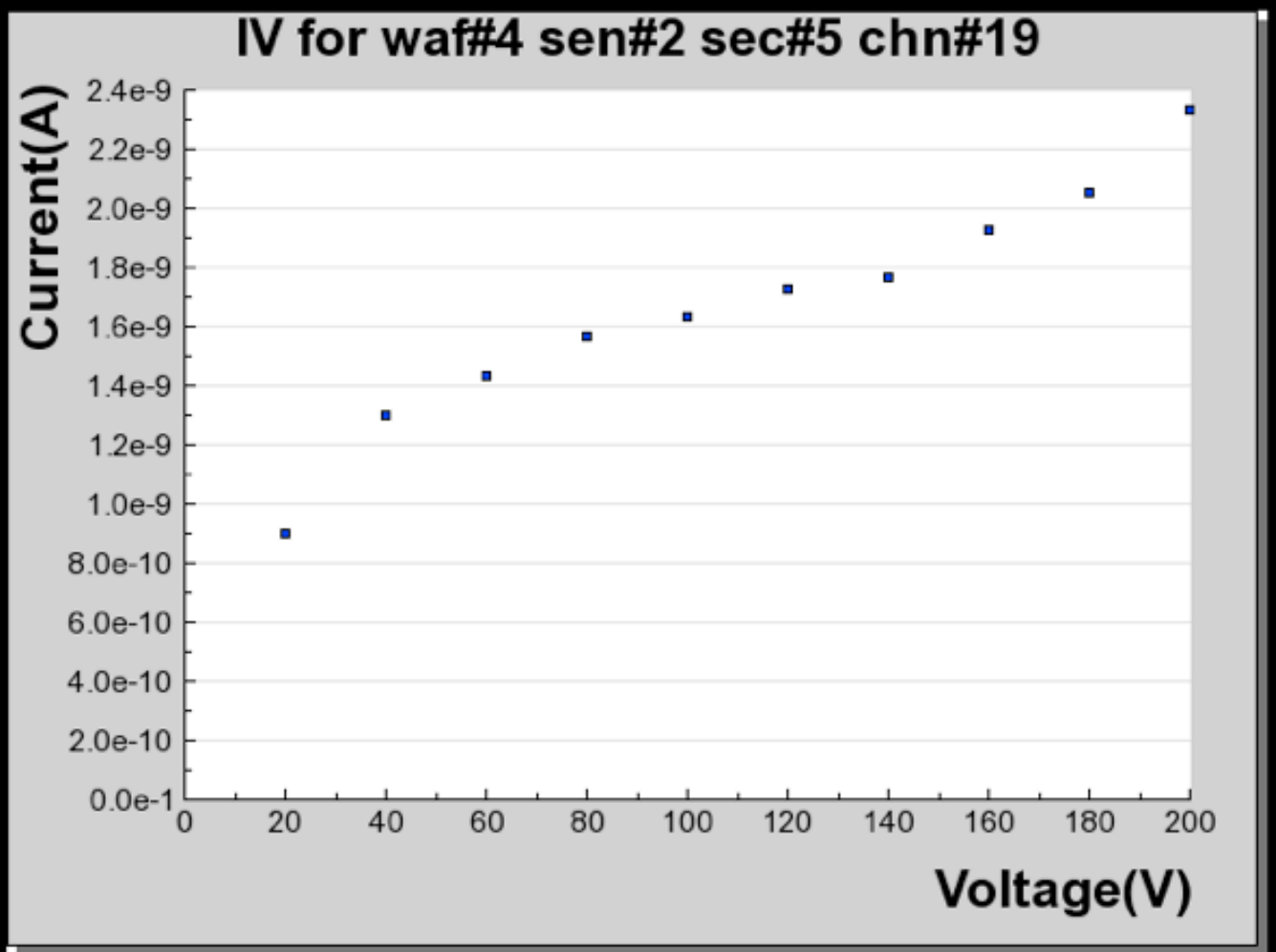
Tests:

- "Addresses"

PVD Graph I-V Form:

Set 'wafer' appropriately and hit "submit" to set other menus appropriately.

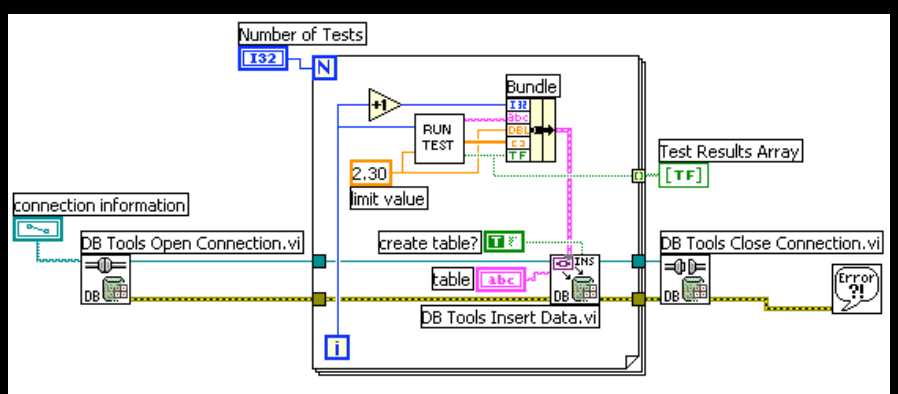
Wafer: 4 Sensor: 2 Sector: 5 Channel: 19 Submit



http://pvd.chm.bnl.gov

Accessing PVD

- **PVD: For PHENIX VTX eyes only**
  - Login: bnltest/phnxvtx
  - Web interface will offer full access
  - But always under construction!
- **PVD machine used to upload text files to DB (via ROOT interface)**
- **Silicon test Labview uploads via SQL interface**



Example from LabView manual

Recent Work

- **Start on inventory system**
  - PAS: Partial implementation
- **Storage of CV&IV measurements**
  - PAS: Uploading of text files
  - MAN: Direct access from SUNY/BNL Labview
- **Access to CV&IV information**
  - PAS: Numbers & graphs

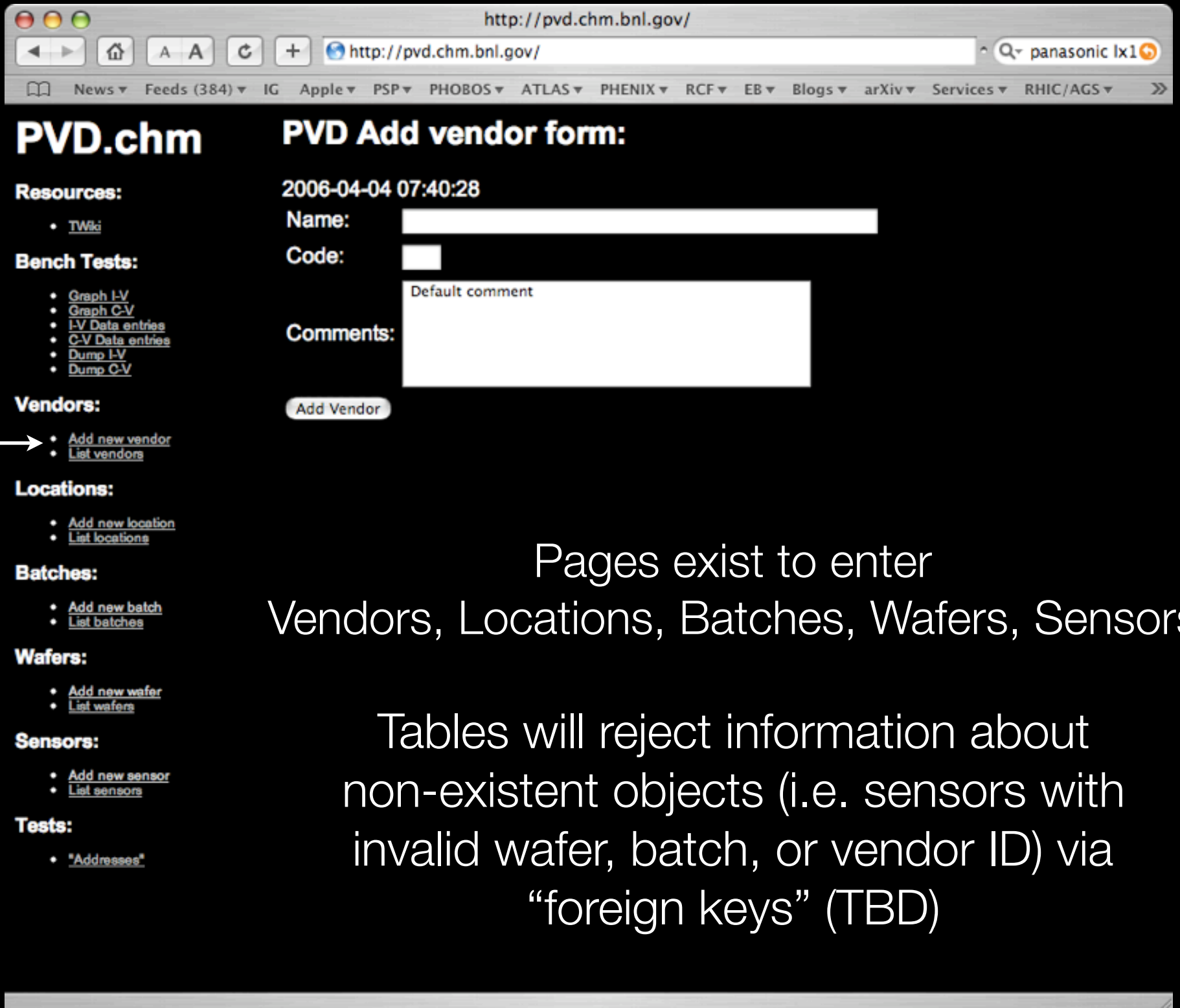
Inventory Data Structure

Vendor	Keep track of multiple sources
Batch	Sets of produced wafers
Wafer	Sets of wafers within a batch
Sensor	Sensors cut from a wafer
Sector	12 Sectors within each sensor

These are the “coordinates” for every Si-related object.
Alternative is a “name”, like HB02W3S1…

IV Measurement Table

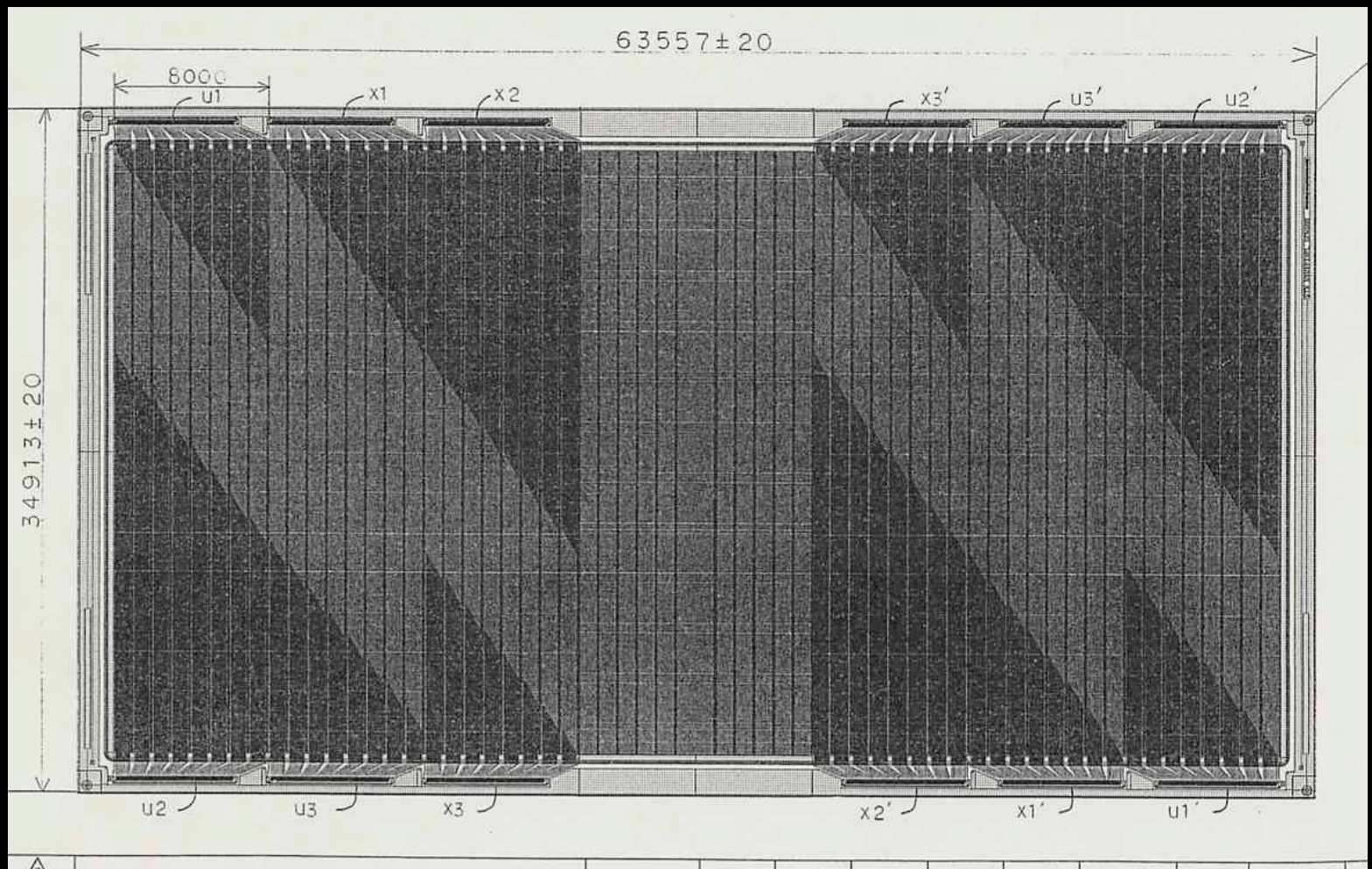
```
[postgres@pvd ~/sql]$ more create-iv-table.sql
drop table iv;
create table iv
(
vendor_id       integer not null,
batch_id        integer not null,
wafer_id        integer not null,
sensor_id       integer not null,
sector_id       integer not null,
channel_id      integer not null,
current         real    not null,
voltage         real    not null,
creation_date   timestamp       not null,
validity_date   timestamp       not null,
constraint iv_pkey  primary key
  (validity_date,creation_date,vendor_id,batch_id,wafer_id,sens
  or_id,sector_id,channel_id,voltage)
);
grant all on iv to apache;
grant select on iv to steinber;
grant insert on iv to steinber;
grant select on iv to manguyen;
grant insert on iv to manguyen;
grant select on iv to bnltest;
grant insert on iv to bnltest;
[postgres@pvd ~/sql]$
```



Pages exist to enter
Vendors, Locations, Batches, Wafers, Sensors

Tables will reject information about non-existent objects (i.e. sensors with invalid wafer, batch, or vendor ID) via "foreign keys" (TBD)

Sector ↔ Integer Map



Would like to avoid putting U1L, X2R, etc in DB

VTX

VTX Web
VTX Web Home
Changes
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Webs
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NCC
Sandbox
TWiki
USATLASHI
VTX

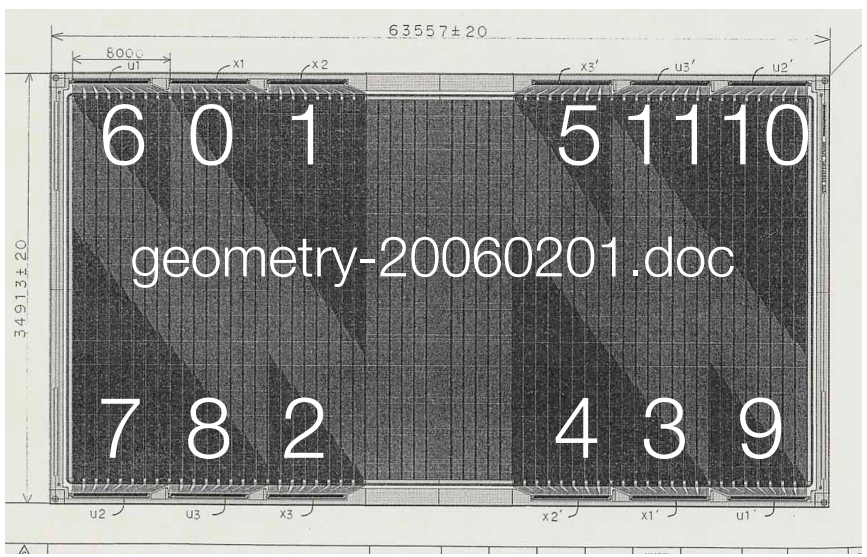
Create personal sidebar

Edit Attach Printable VTX.StripPixelSectorToIntegerMapping r1.2 - 29 Mar 2006 - 20:25 - PeterSteinberg2 topic end

StripPixel Sector To Integer Mapping (Proposal)

It will be slightly awkward to work with sector ID's like "X1R", "U3L", etc. I am proposing that we have a fixed mapping between the sector labels and a simple integer, which runs from 0-11:

Sector	Integer
X1L	0
X2L	1
X3L	2
X1R	3
X2R	4
X3R	5
U1L	6
U2L	7
U3L	8
U1R	9
U2R	10
U3R	11



-- PeterSteinberg2 - 29 Mar 2006

Back to drawing board!

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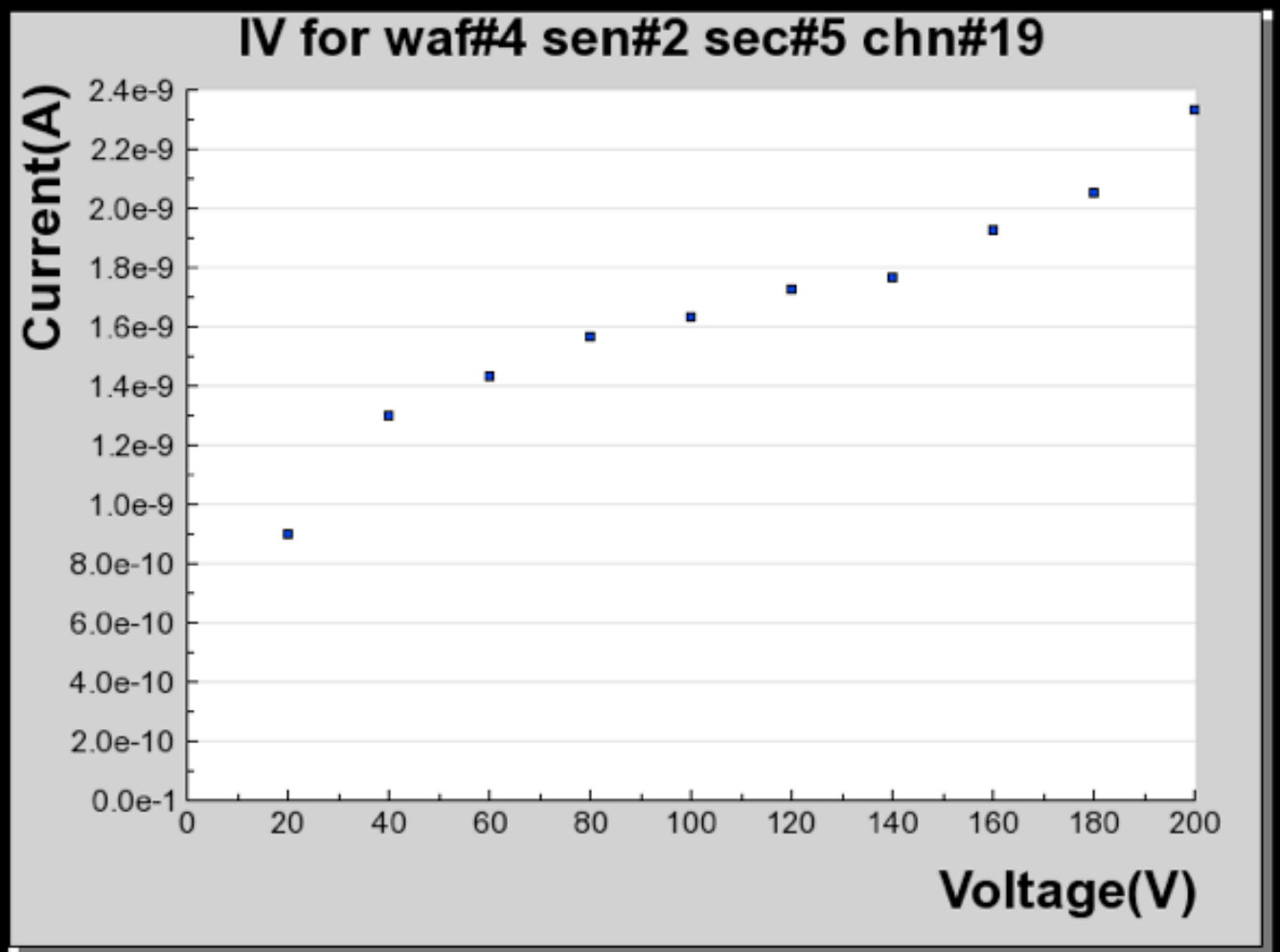
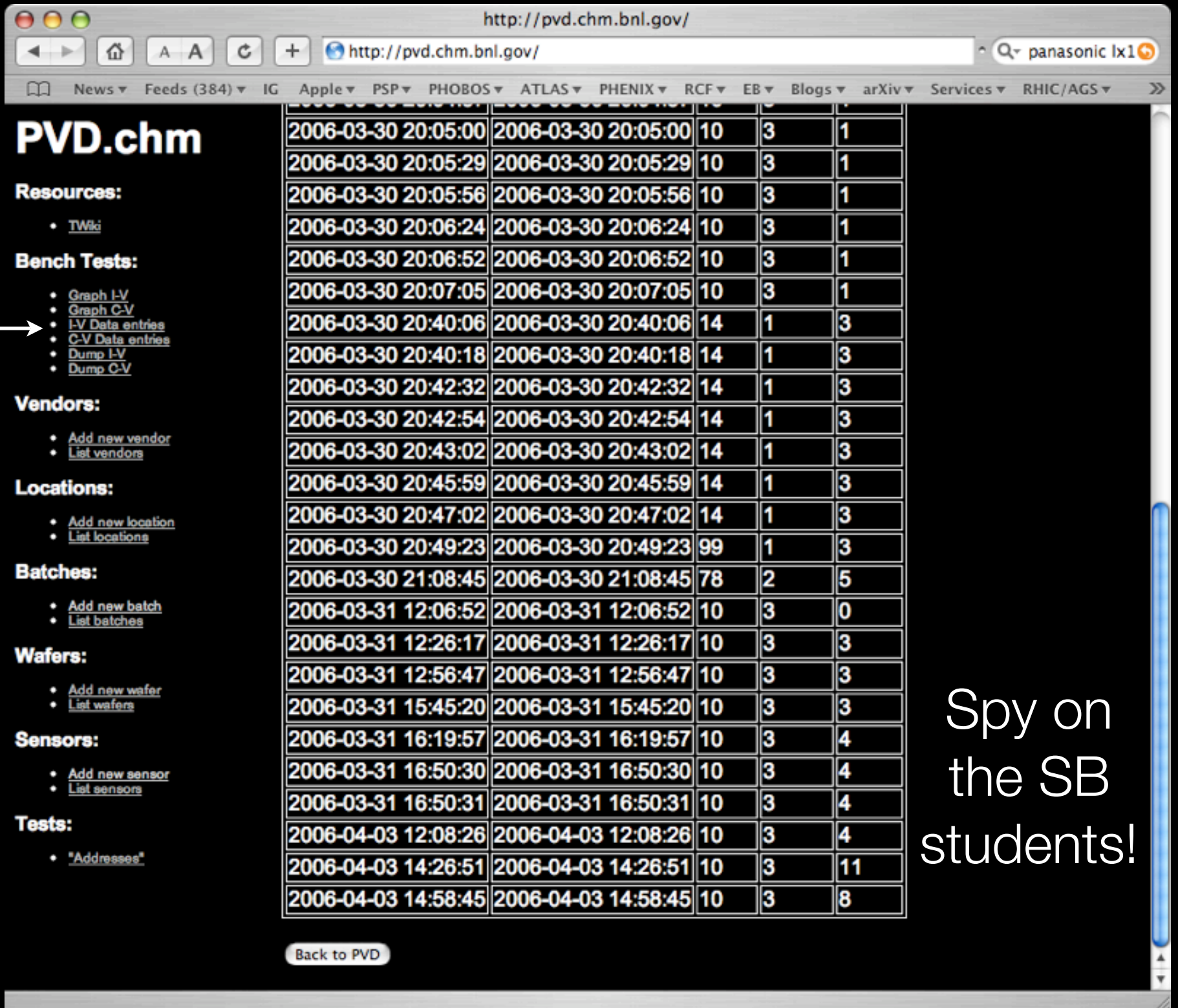


This page demonstrates all of the relevant technologies!
Labview connections, Apache/PHP, Postgres/SQL, jpGraph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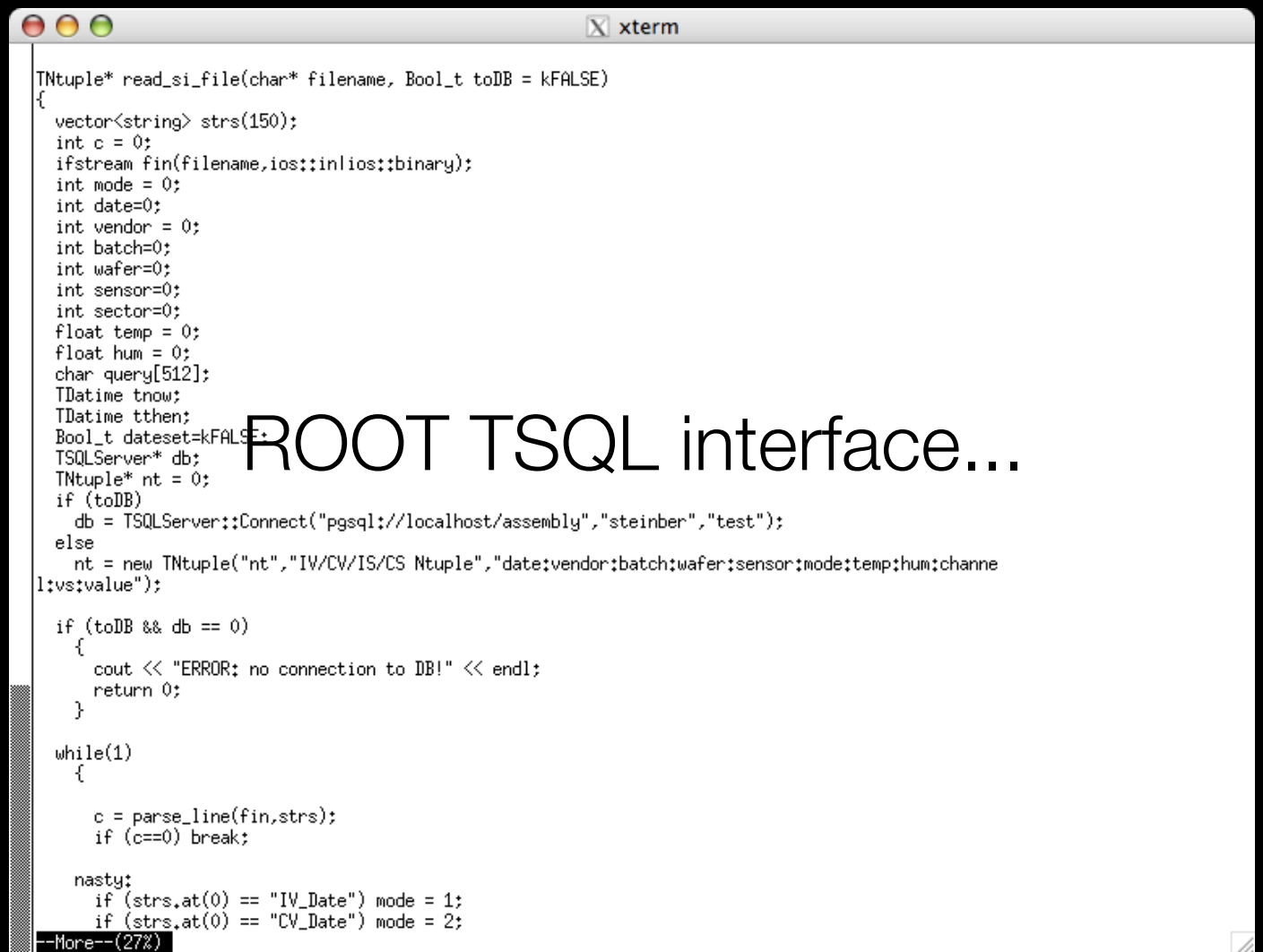
2006-03-30 20:05:00 2006-03-30 20:05:00 10 3 1
2006-03-30 20:05:29 2006-03-30 20:05:29 10 3 1
2006-03-30 20:05:56 2006-03-30 20:05:56 10 3 1
2006-03-30 20:06:24 2006-03-30 20:06:24 10 3 1
2006-03-30 20:06:52 2006-03-30 20:06:52 10 3 1
2006-03-30 20:07:05 2006-03-30 20:07:05 10 3 1
2006-03-30 20:40:06 2006-03-30 20:40:06 14 1 3
2006-03-30 20:40:18 2006-03-30 20:40:18 14 1 3
2006-03-30 20:42:32 2006-03-30 20:42:32 14 1 3
2006-03-30 20:42:54 2006-03-30 20:42:54 14 1 3
2006-03-30 20:43:02 2006-03-30 20:43:02 14 1 3
2006-03-30 20:45:59 2006-03-30 20:45:59 14 1 3
2006-03-30 20:47:02 2006-03-30 20:47:02 14 1 3
2006-03-30 20:49:23 2006-03-30 20:49:23 99 1 3
2006-03-30 21:08:45 2006-03-30 21:08:45 78 2 5
2006-03-31 12:06:52 2006-03-31 12:06:52 10 3 0
2006-03-31 12:26:17 2006-03-31 12:26:17 10 3 3
2006-03-31 12:56:47 2006-03-31 12:56:47 10 3 3
2006-03-31 15:45:20 2006-03-31 15:45:20 10 3 3
2006-03-31 16:19:57 2006-03-31 16:19:57 10 3 4
2006-03-31 16:50:30 2006-03-31 16:50:30 10 3 4
2006-03-31 16:50:31 2006-03-31 16:50:31 10 3 4
2006-04-03 12:08:26 2006-04-03 12:08:26 10 3 4
2006-04-03 14:26:51 2006-04-03 14:26:51 10 3 11
2006-04-03 14:58:45 2006-04-03 14:58:45 10 3 8
Back to PVD
Spy on the SB students!

Bottom Line

- **All basic systems are operational**
  - Labview to PVD (Postgres)
  - Access to PVD via PHP webpages
  - Numbers and graphs
- **Design is still under development**
  - Need features and data structures that will be robust against changes in sensors, test procedures, etc.
  - Expect to wipe and restore DB many times in near future
- **In several months should be able to use DB as “permanent” store**

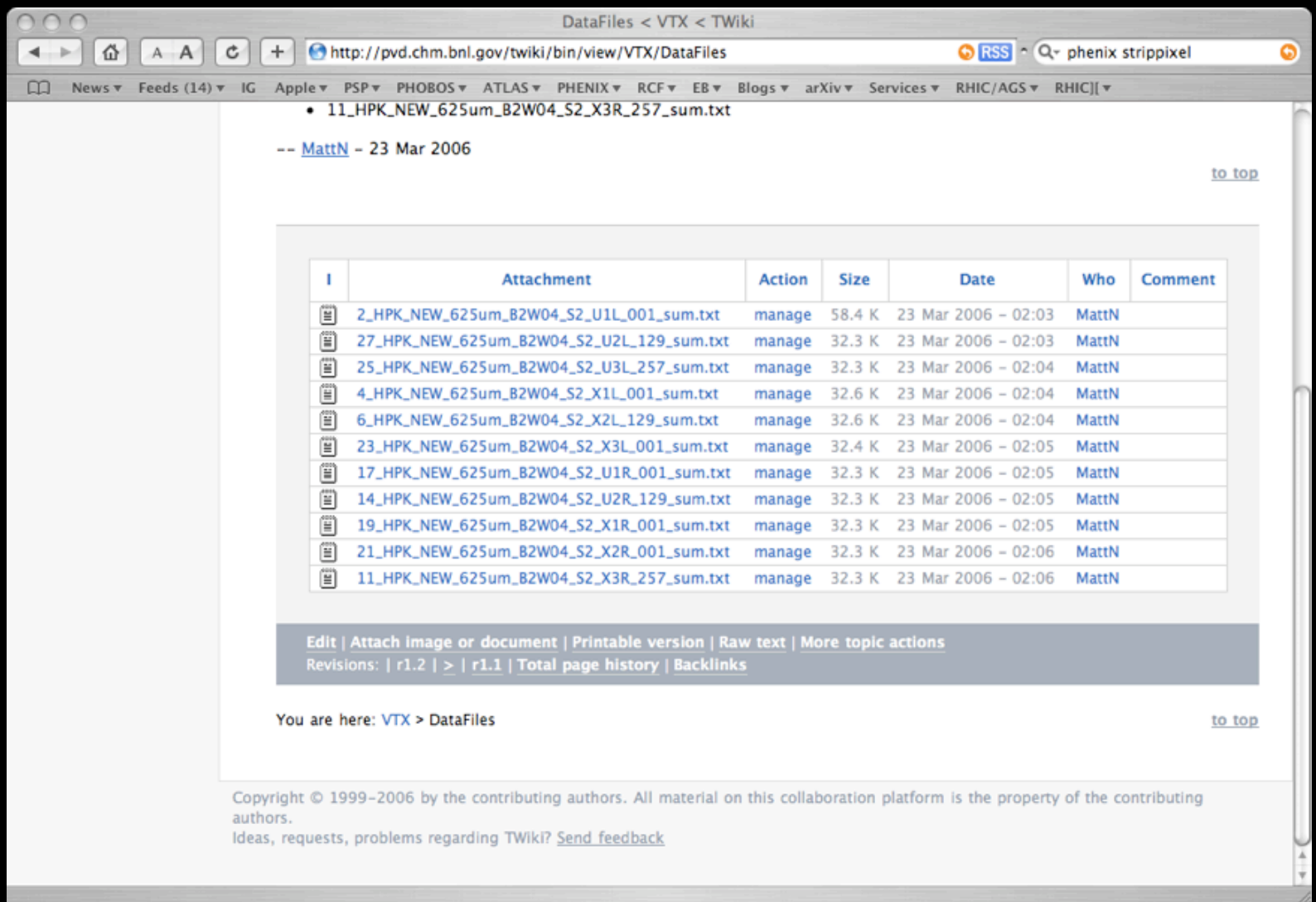
Uploading Text Files



ROOT TSQL interface...

We must always store as text files for now.
Can easily upload all data (~minutes/file)

Data Files on TWiki



500 sensors x 32kB x 12 ~ 200 MB. Not much data...

Next Steps

- **Inventory system**
  - Track each batch, wafer, sensor
  - Location, status
  - Actions performed: shipping, testing
- **Collaborate with NCC**
  - Similar needs for inventory
  - Unfortunately, different working modes, DB access expected
- **Connect with more institutions**
  - Matt N is now a Labview-to-Postgres expert
  - Can we get UNM storing directly to DB?
- **Need more peoplepower!**
  - Design, implementation, webpages, etc.